



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,854	05/11/2006	Herbert Brunner	12406-187US1 P2003,0931 U	3209
26161	7590	10/16/2007	EXAMINER	
FISH & RICHARDSON PC			KUO, WENSING W	
P.O. BOX 1022			ART UNIT	PAPER NUMBER
MINNEAPOLIS, MN 55440-1022			2826	
			MAIL DATE	DELIVERY MODE
			10/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/578,854

Applicant(s)

BRUNNER ET AL.

Examiner

W. Wendy Kuo

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11 May 2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4-6, 9, 15, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Roberts et al., US 6,521,916 B2.
3. With respect to claim 1, Roberts et al. teach in Figure 3 a radiation-emitting and/or radiation-receiving semiconductor component comprising a radiation-emitting and/or radiation-receiving semiconductor chip 35, a molded plastic body (30, 40) which is transparent to an electromagnetic radiation to be emitted and/or received by the semiconductor component (column 14, lines 46-50 and lines 64-66) and by which the semiconductor chip is at least partially overmolded, and external electrical leads (14, 16) that are electrically connected to electrical contact areas of the semiconductor chip (column 14, lines 25-34), wherein said molded plastic body (30, 40) is made of a reaction-curing silicon molding compound (refer to 106, 108, and 124 of Figure 10).

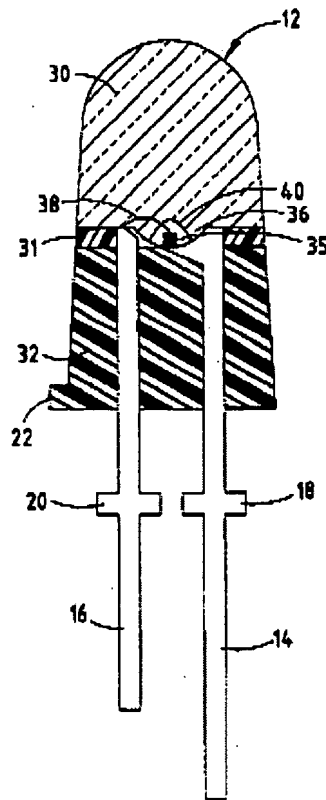


FIG. 3

4. With respect to claim 4, Roberts et al. further teach that the silicone molding compound is a silicone composite material (column 14, lines 48-50; column 15, lines 36-49).
5. With respect to claims 5 and 15, Roberts et al. further teach that the silicone molding compound contains a conversion material that absorbs at least a portion of an electromagnetic radiation of a first wavelength range emitted by the semiconductor chip and/or received by the semiconductor component and emits electromagnetic radiation of a second wavelength range that is different from the first wavelength range (column 14, lines 1-12 and lines 48-50).

Art Unit: 2826

6. With respect to claims 6 and 18-20, Roberts et al. further teach that the semiconductor chip emits electromagnetic radiation in the blue or ultraviolet region of the spectrum (column 12, lines 64-67).

7. With respect to claim 9, Roberts et al. further teach a method of making a semiconductor component wherein

the semiconductor chip is attached to a metallic leadframe, a carrier substrate or a carrier sheet comprising the external electrical leads (column 17, lines 20-22 and lines 32-35),

the semiconductor chip, including subregions of the leadframe, the carrier substrate or the carrier sheet, is placed in a cavity of an injection mold (column 18, lines 1-10),

silicone molding compound is injected into the cavity via an injection molding process or a transfer molding process (refer to Figure 10) (*Note that silicone glob-top with leadframe is inserted into mold and subjected to a de-gas step, which constitutes transfer molding.),

the silicone molding compound is cured in the cavity at least such that a shape-stable molded plastic part is formed (Figure 10).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 2, 7, 8, 11, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al., US 6,521,916.

11. With respect to claim 2, Roberts et al. remains as applied to claim 1 above.

Roberts et al. fail to teach that the silicone molding compound has a curing time of 10 minutes or less. However, differences in curing time will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such curing time is critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality (see next paragraph) of the silicone molding compound curing time, and this curing time has been in common use in similar devices in the art (e.g. Nakamura et al., JP 08335719 abstract), it would have

been obvious to one of ordinary skill in the art at the time of the invention to use these values in the semiconductor component of Roberts et al.

CRITICALITY

The specification contains no disclosure of either the critical nature of the claimed curing time or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in the claim, the applicant must show that the chosen specified variables are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

12. With respect to claim 7, Roberts et al. remains as applied to claim 1 above.

Roberts et al. fail to teach that the semiconductor component has a footprint of approximately 0.5 mm x 1.0 mm or less. However, differences in footprint dimensions will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such dimensions are critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality of the footprint dimensions, it would have been obvious to one of ordinary skill in the art at the time of the invention to use these values in the semiconductor component of Roberts et al.

13. With respect to claim 8, Roberts et al. remains as applied to claim 1 above.

Roberts et al. fail to teach that the semiconductor component has a total component height of 350 um or less, preferably 250 um or less. However, differences

Art Unit: 2826

in component height will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such dimensions are critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Since the applicant has not established the criticality of the component height, it would have been obvious to one of ordinary skill in the art at the time of the invention to use these values in the semiconductor component of Roberts et al.

14. With respect to claims 11, 13, and 16, Roberts et al. remains as applied to claim 2 above.

15. With respect to claim 11, Roberts et al. further teach that the silicone molding compound is a silicone composite material (column 14, lines 48-50; column 15, lines 36-49).

16. With respect to claim 13, Roberts et al. further teach that the silicone molding compound contains a conversion material that absorbs at least a portion of an electromagnetic radiation of a first wavelength range emitted by the semiconductor chip and/or received by the semiconductor component and emits electromagnetic radiation of a second wavelength range that is different from the first wavelength range (column 14, lines 1-12 and lines 48-50).

17. With respect to claim 16, Roberts et al. further teach that the semiconductor chip emits electromagnetic radiation in the blue or ultraviolet region of the spectrum (column 12, lines 64-67).

18. Claims 3, 10, 12, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al., US 6,521,916 in view of Narita, US 6,144,107.

19. With respect to claim 3, Roberts et al. remains as applied to claim 1 above.

Roberts et al. fail to teach that the silicone molding compound has a hardness when cured of 65 Shore D or more. Narita teaches a silicone molding compound having a hardness when cured of 65 Shore D or more (column 5, lines 36-40) for the benefit of providing a solid state pickup device excellent in optical and electrical performances (column 2, lines 9-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the semiconductor component of Roberts et al. with the silicone molding compound of Narita for the benefit of providing a solid state pickup device excellent in optical and electrical performances.

20. With respect to claim 10, Roberts et al. remains as applied to claim 2 above.

Roberts et al. fail to teach that the silicone molding compound has a hardness when cured of 65 Shore D or more. Narita teaches a silicone molding compound having a hardness when cured of 65 Shore D or more (column 5, lines 36-40) for the benefit of providing a solid state pickup device excellent in optical and electrical performances (column 2, lines 9-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the semiconductor component of Roberts et al. with the silicone molding compound of Narita for the benefit of providing a solid state pickup device excellent in optical and electrical performances.

Art Unit: 2826

21. With respect to claims 12, 14, and 17, Roberts et al. in view of Narita remains as applied to claim 3 above.

22. With respect to claim 12, Roberts et al. further teach that the silicone molding compound is a silicone composite material (column 14, lines 48-50; column 15, lines 36-49).

23. With respect to claim 14, Roberts et al. further teach that the silicone molding compound contains a conversion material that absorbs at least a portion of an electromagnetic radiation of a first wavelength range emitted by the semiconductor chip and/or received by the semiconductor component and emits electromagnetic radiation of a second wavelength range that is different from the first wavelength range (column 14, lines 1-12 and lines 48-50).

24. With respect to claim 17, Roberts et al. further teach that the semiconductor chip emits electromagnetic radiation in the blue or ultraviolet region of the spectrum (column 12, lines 64-67).

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Oshio et al., US 6,274,890 disclose a semiconductor light emitting device that includes a semiconductor light emitting element, a resin stem having a recess, and a projection made of a light-transmissive thermosetting resin on the resin stem so as to

Art Unit: 2826

cover the entire upper surface and continuous upper part of side surfaces of the resin stem.

Hashimoto et al., US 6,930,332 disclose a light emitting device that can provide enhanced heat radiation as well as allow light from a light emitting diode chip to be efficiently extracted out of the device.

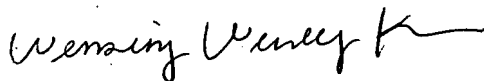
Shuji et al., JP 08335719 (abstract) disclose a nitrate semiconductor light emitting device that is encompassed by a silicone resin.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. Wendy Kuo whose telephone number is (571) 270-1859. The examiner can normally be reached Monday through Friday 7:00 AM to 4:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue A. Purvis can be reached at (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Art Unit: 2826

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



W. Wendy Kuo
Examiner
Art Unit 2826

WWK



LEONARDO ANDUJAR
PRIMARY EXAMINER